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ABSTRACT

This report presents the results of a three-year educational partnership that supports a unique interdisciplinary team approach to professional development. The Sage Colleges collaborated with two school districts (City School District of Albany and Niskayuna Central School District) to enable educators to align content and standards; draw upon a bank of assessment vehicles, questions, and assignments; create classrooms in which students are able to make content connections across the curriculum; and develop an interdisciplinary pool of educators capable of addressing the future needs of standards-based professional development. The elementary, middle, and high school teams achieved this outcome through different experiences. This report focuses on the experiences of the high school team in mapping their curricula, developing connected classroom projects, and creating generic assessment tools and rubrics. Appendices contain curriculum maps; chemistry, biology, and social studies projects; outcomes and indicator statements; and generic assessment tools and rubrics. (DDR)

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ED 417 963

# CONNECTIONS

## *An Interdisciplinary Team Approach to Professional Development*

**High School Team**

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CITY SCHOOL DISTRICT OF ALBANY
NISKAYUNA CENTRAL SCHOOL DISTRICT
THE SAGE COLLEGES

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# CONNECTIONS: An Interdisciplinary Team Approach to Professional Development

## *High School Team*

*A Partnership of*

City School District of Albany
Niskayuna Central School District
The Sage Colleges

COUNCIL FOR CITIZENSHIP EDUCATION
Troy, New York

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**Also available:**

CONNECTIONS: *An Interdisciplinary Team Approach to Professional Development, Elementary Team*

CONNECTIONS: *An Interdisciplinary Team Approach to Professional Development, Middle School Team*

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# Preface

Recent years have witnessed serious efforts by national organizations, state education departments, and local school districts to restructure education from within the classroom by developing new standards for what students learn and how teachers teach. Every so often, this process must occur if classroom knowledge and behavior is to adapt to new ideas, information, and expectations arising out of the content disciplines, the field of education, and civil society.

Today is one of those times. However, if actual change is to occur in the classroom, there are two teacher needs that must be met: (1) teachers need to see concrete examples that demonstrate the desired focus of the standards; and (2) teachers need opportunities to translate standards into classroom use. We believe that these two needs *of* teachers can be met *by* teachers working together in interdisciplinary teams focused on the development of model assessment vehicles as a means of aligning content standards with both curriculum and instruction. This premise serves as the foundation for our project called, CONNECTIONS.

In 1994, the CONNECTIONS Project began as a three-year partnership with the City School District of Albany, Niskayuna School District, and The Sage Colleges. The project embodies a unique interdisciplinary team approach to professional development. Three teams were established from the outset – Elementary School, Middle School, and High School – with educators from each partner institution represented on each team. The teams sought to achieve the following four outcomes: (1) educators who are able to align content and standards; (2) colleagues who are able to draw upon a bank of assessment vehicles and questions/assignments; (3) classrooms in which students are able to make content connections across the curriculum; and (4) districts which gain an interdisciplinary pool of educators capable of addressing future needs of standards-based professional development.

Each team achieved those outcomes in their own way and with different experiences. The following pages detail the experiences of the High School Team in mapping their curriculums, developing connected classroom projects, and creating generic assessment tools and rubrics. The team members document how, by working collaboratively, they formulated "essential questions" which proved to be the key to unlocking a multitude of connections for their classes. For team members, CONNECTIONS addressed the real challenge faced by many high school teachers of connecting and collaborating with other disciplines in light of time constraints and strict requirements. Evaluation of their experiences elicits responses that are both honest and inspiring.

One final note on the participants and this publication. The preceding list of participants includes all individuals who have been involved throughout all or part of the three years of the project along with those who served as coordinators and staff. This final publication describes the work of all three years of the project; however, only those listed as participants through 1997 and identified by an asterisk assisted in the writing of this publication. The information included on the following pages therefore reflects the status of the High School Team's work as of the end of the third year of the project. However, this is not an end to the exciting work initiated during the grant period. The classroom projects and assessment vehicles described herein continue to be refined and improved and will be utilized by team members and their colleagues for years to come.

# CONNECTIONS High School Team

## Introduction

*If actual **change** is to occur in the classroom, there are two needs of the classroom teacher that must be met: (1) teachers need to see concrete examples that demonstrate the desired focus of the standards in a form they can understand; and then (2) teachers need opportunities to translate standards into classroom use.*

CONNECTIONS Grant Proposal, 1994

CONNECTIONS was conceived as a professional development project with a focus on creating a model interdisciplinary curriculum that could be used by teachers. It enabled teachers involved in the project's development to be in control of writing their own curriculum, assessments, rubrics, and projects across a variety of disciplines.

The High School team contained representation from all three of the project partners—namely, teachers from Albany High School and Niskayuna High School, as well as a member of the faculty and a graduate student from The Sage Colleges. The subjects represented included: English, Global Studies, U.S. History and Government, Chemistry, Biology, Math, and Latin.

## Team History

At the start of the first year of the project, the two high schools agreed to meet separately so that we could investigate our individual curriculums. At the end of the first year, we regrouped into one team to prepare for the next phase of the project. We found this endeavor to be worthwhile, as it resulted in two important opportunities. First, it gave us a chance to review our disciplines. Second, it encouraged individual members on the teams to map their respective curriculum in a linear format organized chronologically from September through May. (See the curriculum mapping section below and Appendix 1 for information on the maps.) Team members examined and catalogued important concepts, activities, skills, and content.

The Niskayuna members focused on finding a common theme and agreed that *change* was an important part of every student's life. The driving curriculum issue for us was: How could students be involved in activities that compared the time when their parents were young to the present time? If students explored those changes they might be able to make predictions about what their life would be like when they reach their parents' age. Despite the excitement and interest in this idea, the Niskayuna teachers could not find a way to link activities in each of their courses.

As the Albany team studied their curriculum maps, they noticed that several universal concepts began to emerge such as conflict, cycles, economic issues, and curiosity. The more we discussed these concepts, the more we realized that either the stimulus or the effect of each of these forces symbolized some kind of "change." *Dynamics of change* became the unifying principle connecting the entire high school team.

Once we had defined this unifying principle, we struggled to align the concepts across the curriculum. A consultant helped us to realize that we should abandon topical concepts as links, and instead design a question that embodied our unifying principle of *change* in ways that could be used universally. The High School team then developed the following two-part *essential question* focused on change and the human condition: *How does change affect us? How can we effect change?"*

## Curriculum Mapping

The essential question was expanded to include two additional questions which would direct the study of change within each of the content areas represented on our team. Together, the essential questions are:

- *How can I recognize the forces of change?*
- *How does change affect us?*
- *How can we effect change?*
- *How can we study change?*

To integrate the questions within the existing curriculum map, we developed an outcome for each, codified each outcome by letters (A, B, C, D), and applied each outcome to the existing map. (See Appendix 1.) The resulting maps show the links which might be developed between the *essential question* and specific content topics. Thus, the questions became the interdisciplinary link.

The final combined maps list disciplines down the left side as row headings and months across the top as column headings creating, in essence, a year-long calendar of topics and skills covered within courses taught by the team members. The maps also contain connections to other disciplines.

Four maps were developed—one for each of the four outcomes developed from the essential question. For each outcome, we developed a list of *indicator* statements which were numbered and then applied to each topic in the map. For example, our first map is for Outcome A and its indicator statements which read "The student recognizes forces of change by: (1) identifying what changes and what does not; (2) recognizing forces that can bring about change; and (3) recognizing and articulating rhythms and patterns of change." So, in Chemistry class, the topics covered in September seek to have students recognize forces of change by satisfying only the second indicator statement whereas the topics covered in October seek to have students recognize forces of change by satisfying all three indicator statements. (Outcomes and indicator statements are discussed further in the following two sections.)

## Project Description and Replication Plan

Completion of the curriculum maps allowed us to find common topics and to consider arranging teaching schedules around these topics. Choosing an essential question allowed us to focus on common curricular topics. We now needed a mechanism to put this information into practice in the classroom. We decided to develop and implement projects in the spring of the second year of the project.

We chose the theme of *rivers* for our projects because the subjects and grades of all team members could use rivers as an instrument to teach our respective subjects. The Chemistry classes decided to do water quality testing, looking for *changes* in the quality of the water depending on the stream used, the time of year, the amount of time between the tests, and the use of land bordering the stream. (See Appendix 2.) The Biology classes studied what was living in streams. (See Appendix 3.) Both Science classes were able to apply Outcome B, "The student recognizes the impact of change," to each of their projects as well as Outcome D, "The student employs multiple capacities to study change," to develop conclusions about their research.

The Social Studies classes, composed of a tenth grade Advanced Placement European History/Global Studies class and a ninth grade Global Studies class, chose to use Documents Based Questions (DBQs) to focus on water politics and Earth's water resources as influential agents of change in the realm of international relations and domestic policies. A number of different indicator/outcome statements could have been used in these Social Studies projects which took place at both high schools simultaneously. Students spent two to three weeks constructing the DBQs on hydro-politics in the Middle East. They researched, composed relevant questions for other students to answer, provided an historical context for the question, and provided ten to twelve passages, pictures, cartoons, maps, graphs, etc., that presented information on the topic. The DBQs and responses were each evaluated using rubrics. (See Appendices 4 and 4A.)

Our outcome statements provided a wealth of opportunity for application in the classroom. Here is an example of an outcome statement reworded to fit one teacher's project: How does

the *Three Gorges Hydro Project* represent change, and at the same time, how is it consistent with patterns of traditional China? (See Appendix 5.) The outcome statements employed were Outcomes A and B, "The student recognizes forces of change," and "The student recognizes the impact of change." The indicator statements utilized in this project were Indicator D1, "The student analyzes situations that involve change," as well as Indicator A3, "The student recognizes and articulates rhythms and patterns of change." One of the wonderful aspects of developing these outcomes and indicator statements for the teacher and student is that they could be used for just about any discipline and any topic/subject. (See Appendix 6.)

## Generic Assessment Tools and Rubrics

We then turned our attention to developing a generic assessment tool that we felt best reached the level of teaching to which we aspire. Our aim was to create some assessment tools to be used in our classrooms incorporating all of the months of work and understanding that went into this project experience. (See Appendix 7.)

Our work included many hours of trying to decipher the intricate and comprehensive nature of developing integrated curriculum especially across geographic, economic, and social distances. What we developed not only surprised us, it excited us, as well. We developed a group of essential questions that were truly driving in essence, and that genuinely *connected* each of us to the endeavor that lay ahead.

We all agreed that change is one of the themes which drives each of our disciplines and *connected* us to each other. How do we put this very vague terminology into practical usage? How does an American History teacher in Albany *connect* with a Latin teacher in Niskayuna?

We discovered that asking students to try to recognize the *forces of change* in a World History class context, for example, would encourage investigation on their part; but the teachers did not want the students' investigation to stop there—that exercise was simply the beginning! We also wanted our students to be able to recognize the *impact of change* in every class.

We found it equally important for our students to be able to recognize *one's role in effecting change* when studying a given academic or social situation. Finally, we wanted our students to be able to *employ multiple capacities to study change*, or in other words, collect data and information about a given situation and display that information in a meaningful way, thus proving comprehension. This last outcome typifies the incredible potential for students to truly understand the information we are required to teach.

As teachers, we felt our essential questions provided us with tools that were practical in the classroom and that could be easily used from one class and topic to another. Thus, we were asking our students to use varied strategies to show that they understood the forces and impacts of change.

Our next step was to construct an overall *goal* toward which our students could aim. As discussed in previous sections, we then created a set of *outcomes* that could be used by teachers to help students recognize from the outset what was expected of them. Finally, we created a bank of questions that should be used as indicator statements. Those questions would aid the student in highlighting what needs to be studied in order to reach the intended outcome.

For example, if a student were to select Outcome C, "The student recognizes one's role in effecting change," for a study of Civil Rights leaders or Progressive reformers in their American History class, the indicators for that outcome would ask the student to: discuss how an individual can influence change, recognize what changes can or cannot be controlled, and articulate effective strategies for change. This outcome and its indicator statements could be used for any topic thus making them truly generic. This is true for the other outcomes as well.

After we dissected our respective curriculums, charted our "connections," and decided on our goals, outcomes, and indicators, we needed to find ways to evaluate the actual connections made in the classroom. At this stage, all teams participating in the project convened for an intensive workshop on assessment tools including rubric development and design presented by an outside consultant. Participants felt enlightened by this presentation, and our team soon began to develop some rubrics that would offer us the opportunity for practical use.

One goal of a rubric is to offer the student a quick checklist of what is expected of him/her *before* an assignment begins. One Social Studies teacher on our team used a rubric that provides a range of scores for: the development of a thesis/argument; analysis/critical thought; historical evidence; and writing strategies. The librarian on our team created an activity and assessment on "Search Strategies for Electronic Databases." (See Appendices 8 and 8A.)

The Latin teacher in our group designed a rubric to assess the creation of a Roman stamp which had to include a Latin motto. The motto receiving the highest score must meet the following criteria: "catchy, creative wording; accurate vocabulary and grammar; a motto very appropriate to themes of Roman culture studied; and a thorough familiarity with Roman culture." The motto receiving the lowest score "has many inaccuracies; no relation to themes of Roman culture studied; and no familiarity with Roman culture." (See Appendix 9.)

## Evaluation

Our overall response to the project was positive. Many teachers noted an improved sense of "connection" with their students. For the first time we began to think of our teaching as part of a connected whole, particularly how our respective curriculums are seen from the student's perspective. We recognized the need to provide students with a set of questions that would broaden their approach to the educational experience and at the same time would reveal the interrelationships that exist within their curriculums. One participant, for example, noted that she felt "new respect for the great amount of previously disconnected content [her] students must master as they move every forty-five minutes to a wholly different self-contained classroom." Another found that the project "forced [her] to reexamine school and learning from a student's perspective," which made her "more sensitive to students' needs."

This self-reflection led the team members to develop new lessons or approaches, many of which they would not have felt confident about attempting prior to the project. Says one participant, "I am amazed how many of them [the students] can quickly tie . . . concepts together. . . . Before CONNECTIONS I would never have thought to have students attempt such a sophisticated idea." Success with new ideas, in turn, gave teachers the "incentive to try to improve on some of [their] own weaknesses" and to get students "more actively involved in their own learning." One participant, reflecting on comments made by the team consultant, stated, "it's central to the concept that the kids buy into it and take ownership of it. I believe that." Another team member reflected, "I now get students to take greater responsibility for learning." There seemed to be agreement that the team's efforts in their classrooms "changed attitudes, aspirations, and appreciation on the part of the students." The "classroom dynamic was markedly different from past assignments."

We not only felt this new connection with students, but connected with other faculty as well. Perhaps the most universal comment was that the participants enjoyed and benefited from the regular interaction with teachers from other disciplines. Previously, participants had not devoted a concentrated effort to investigate connections to other subjects. Most were discipline-based in their mode of inquiry and had never been given the opportunity to think about connections that span other areas such as the humanities and the sciences. One teacher noted the "disconcerting" fact that "seldom

does a teacher in another class either know about or talk about what the previous discipline has deemed important."

The interaction with educators from other disciplines and districts was the most rewarding part of our work on the project. "I am quite gratified to have worked with very accomplished teachers from two high schools. . . . For me, this gathering of professionals on a somewhat regular basis was the best part of the project." The project fostered discussion, strengthened respect for other disciplines, and led to the development of specific lessons and activities for investigating bridges that span the educational spectrum. These links caused participants to expend increased efforts in planning so as to achieve lessons and activities in which students could more easily see the connection among their courses of study. "The most significant change in the way that I think about planning lessons has been to focus on developing some context for learning."

Participants also focused on and improved their knowledge of the evaluation process. Much time was spent clarifying and making explicit underlying issues such as rubrics, outcomes, and indicators. This led to a greater understanding which then resulted in an overall restructuring of assessments in ways that require students to find and explain the connections among other courses of study.

However, there were some drawbacks. Most notably, some teachers felt that there was too much "paper shuffling" and that a "prescribed curriculum often seemed an obstacle rather than a vehicle for a new idea." Some members of the team were also dissatisfied with rubrics. To these teachers, the use of rubrics often seemed to have "a homogenizing effect," stifling rather than encouraging student creativity. As one teacher noted, "rubrics are most helpful for long-term projects," and "students often come up with wonderful projects with their own high standards in place."

Development of the curriculum map was also a new experience for most of the participants which led to some frustration yet in fact, was the area of most growth. At times, the level of detail in the map's development seemed to stifle the creative juices that had been generated and to sidetrack the direction of discussions. There was some resistance to looking beyond the borders of one's own discipline, but much of this initial resistance dissipated as the curriculum map began to take shape. Our work on the development of the curriculum map was one area of substantial individual growth and progress resulting in a product that will have lasting value. The primary value, however, was the *process* of developing the map, which was rich in discussion, debate, and eventual consensus.

Finally, it is perhaps not surprising that most of our growth and development occurred in the area of *change*—change in the dynamic of classroom instruction; change in teacher attitudes toward disciplines and the gradual elimination of boundaries among them; change in expectations for student learning; and changes and improvements in the goals and implementation of the techniques used for student evaluation.

In summary, CONNECTIONS was a successful faculty development project in which all participants were actively engaged. Our knowledge base was increased, attitudes changed, instructional methodology was refocused, and improved lessons, activities, and evaluation instruments were developed and implemented. Participants felt that working on this project truly made some real connections for them in the field of education.

# Appendices

## CONNECTIONS High School Appendix 1. Curriculum Maps
## Curriculum Map for Outcome A

A. The student recognizes forces of change by:

1. identifying what changes and what does not
2. recognizing forces that can bring about change
3. recognizing and articulating rhythms and patterns of change

| | September | October | November | December | January | February | March | April | May |
|---|---|---|---|---|---|---|---|---|---|
| **Chemistry** | • Great ideas in chemistry<br>**2** | • Great ideas<br>• Stoichiometry<br>• Equations<br>• Hands-on lab work<br>**1, 2, 3** | • Gas laws<br>• Stoichiometry<br>• Hands-on lab work<br>**1, 2, 3** | • Phases<br>• Mixtures<br>• Gas laws<br>• Hands-on lab work<br>**1, 2, 3** | • Bohr model<br>• Orbital model<br>• Links to history<br>• Hands-on lab work<br>• Quantum mechanics<br>**1, 2, 3** | • Kinetics<br>• Energy<br>• Hands-on lab work<br>**1, 2, 3** | • Equilibrium<br>• Free energy<br>• Spontaneity<br>• Prediction<br>• Law of chem equilibrium<br>• Hands-on lab work<br>**1, 2, 3** | • Acid-base<br>• Oxidation-reduction<br>• LeChatelier's Principle<br>• Hands-on lab work<br>**1, 2, 3** | • Nuclear reactions<br>• Organic reactions<br>• Stars<br>• Analysis lab project<br>• Hands-on lab work<br>**1, 2, 3** |
| **AP European History** | • Middle Ages<br>• Renaissance<br>**1, 2, 3** | • Protestant Reformation<br>• Religious wars<br>• Thirty Years' Wars<br>**1, 2, 3** | • Commercial revolution<br>• Colonization<br>• Absolute monarchs<br>**1, 2, 3** | • Scientific Revolution<br>• Enlightenment<br>• French Revolution<br>**1, 2, 3** | • Industrial Revolution and urbanization<br>• Congress of Vienna<br>• Rise of liberalism<br>**1, 2, 3** | • Unification of Italy and Germany<br>• International competition and industrialization<br>• Middle class challenged<br>**1, 2, 3** | • World War I<br>• Russian Revolution<br>• World between wars<br>**1, 2, 3** | • World War II<br>• Cold War<br>• Modern Europe<br>**1, 2, 3** | • Middle East<br>**1, 2, 3** |
| **Math 11H** | • Polynomial and rational expressions<br>**1, 2, 3**<br>• Intro to functions **1, 2, 3**<br>• Powers and exponents<br>**1** | • Exponential and power functions<br>**1, 2, 3**<br>• Inverse functions **1**<br>• Transformations of functions<br>**1, 2, 3** | • Logarithms<br>**1, 3**<br>• Logarithmic functions<br>**1, 2, 3** | • Curve fitting and data analysis<br>**1** | • Quadratic equations and complex numbers<br>**1, 2** | • Cosine and sine functions<br>• Trigonometry functions and identities<br>• Equations and inequalities<br>**1, 2, 3** | • Quadratic equations and complex numbers<br>• Trigonometry equations project<br>**1, 2** | • Trigonometry applied to triangles | • Probability<br>• Statistics<br>• Final project<br>**1, 2, 3** |
| **Math 10H** | • Polynomial expressions<br>• Factoring<br>• Higher degree expressions<br>**1, 3** | • Rational expressions<br>• One variable data displays<br>**1, 2, 3** | • Graphing techniques<br>• Two variable data<br>**1, 2, 3** | • Equation solving techniques<br>• Analyzing two variable data<br>**1, 2, 3** | • Properties of geometric shapes<br>• Great mathematicians museum project<br>**2** | • Right triangles and trigonometry<br>• Great mathematicians museum project<br>**1, 3** | • Locus<br>• Logic<br>**1, 3** | • Geometric proof<br>• Matrices<br>**1, 3** | • Probability<br>**1, 3** |

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## CONNECTIONS High School Appendix 1. Curriculum Maps
## Curriculum Map for Outcome A (continued)

A. The student recognizes forces of change by:
1. identifying what changes and what does not
2. recognizing forces that can bring about change
3. recognizing and articulating rhythms and patterns of change

| | September | October | November | December | January | February | March | April | May |
|---|---|---|---|---|---|---|---|---|---|
| **US History & Government 11** | • Constitutional foundations<br>**1, 2** | • Constitutional foundations<br>• Constitution at work<br>**1, 2** | • Constitution tested<br>• Reconstruction | • American industrialization<br>**1, 2, 3** | • American industrialization<br>• Changing America<br>**1, 2, 3** | • Protest and reform<br>• America reaching out<br>**1, 2, 3** | • America reaching out<br>• Prosperity and depression<br>**1, 2** | • Age of global crisis<br>• America in uncertain times<br>**2, 3** | • Limits of power<br>**1** |
| **Latin 9** | • Intro to Latin<br>• Indo-European family of languages<br>**1, 2, 3** | • Verbs<br>• Commands<br>• Prepositions<br>• Adverbs<br>**1, 2, 3** | • Neuter gender<br>• New irregular verbs<br>• 3rd declension adjectives<br>• Perfect tense and principal parts of verbs<br>• Numerals<br>**1, 2** | • Dative case<br>• Future tense<br>• Pluperfect and future perfect tenses<br>• 4th and 5th declensions<br>**1, 2** | • Intro to passive voice<br>• Pronouns<br>• Compound verbs<br>**1, 2, 3** | • Passive voice<br>• Intro to poetry<br>• Participles<br>• Comparisons<br>• Human body and vocabulary<br>**1, 2, 3** | • Dependent verbs<br>• Place and time<br>• Participles<br>• Intro to subjunctive<br>**1** | • Uses of the subjunctive<br>• Ablative absolutes<br>• Indirect statement<br>**1, 2, 3** | • Uses of the subjunctive<br>• Ablative absolutes<br>• Indirect statement<br>• Impersonal verbs<br>**1, 2, 3** |
| **English 11** | • Beowulf<br>• Bede, "Seafarer" (Exeter book)<br>• Ballads<br>• Riddles<br>**1** | • Malory, *Morte d'Arthur*<br>• Legends of "King Arthur"<br>• "Sir Gawain"<br>• Chaucer, *Canterbury Tales*<br>**2** | • Shakespeare, Sonnets and *Macbeth*<br>**2** | • Sir Thomas More, *Utopia*<br>• Aldous Huxley, *Brave New World*<br>**2** | • Sir Thomas More, *Utopia*<br>• Aldous Huxley, *Brave New World*<br>**2** | • Dennis Hevesi, "Running Away"<br>• Stephen Crane, *Maggie Girl of the Streets*<br>**2** | • Saki, "Tobermory"<br>• G.B. Shaw, *Pygmalion* | • Arthur Miller, *Death of a Salesman* | • George Orwell, "Shooting an Elephant" and *1984* |
| **English 10R** | • Greek and Latin poetry<br>• Culture<br>• Lyric<br>• Epic<br>**1, 2, 3** | • Greek Theater<br>• *Oedipus Rex*<br>• Greek and Roman Art<br>**1, 2, 3** | • Middle Ages<br>• Arthurian legends<br>• *Beowulf*<br>• Chivalry<br>• Confluence<br>**1, 2, 3** | • Middle Ages<br>• *Tristan and Iseult*<br>• Chivalry<br>• Courtly love<br>• Medieval art<br>**1, 2, 3** | • Renaissance<br>• *Doctor Faustus*<br>• Sonnets<br>**1, 2, 3** | • Renaissance<br>• *Macbeth*<br>**1, 2, 3** | • Renaissance art<br>• Romantic and Victorian Ages<br>• Romantic poetry<br>• *A Christmas Carol*<br>**1, 2, 3** | • Impressionism<br>• Landscape painting<br>• Modern Age<br>• *Of Mice and Men*<br>**1, 2, 3** | • Modern Age<br>• *Night*<br>• *Twelve Angry Men*<br>• Modern art<br>**1, 2, 3** |



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## CONNECTIONS High School Appendix 1. Curriculum Maps
## Curriculum Map for Outcome B

B. The student recognizes the impact of change by:

1. stating consequences of change
2. articulating and adapting coping strategies for dealing with change
3. discussing various reactions to change
4. recognizing what causes resistance to change
5. recognizing how change affects one's expectations

| | September | October | November | December | January | February | March | April | May |
|---|---|---|---|---|---|---|---|---|---|
| **Chemistry** | • Great ideas in chemistry **1** | • Great ideas • Stoichiometry • Equations • Hands-on lab work | • Gas laws • Stoichiometry • Hands-on lab work | • Phases • Mixtures • Gas laws • Hands-on lab work **1, 2** | • Bohr model • Orbital model • Links to history • Hands-on lab work • Quantum mechanics **1, 3** | • Kinetics • Energy • Hands-on lab work **1** | • Equilibrium • Free energy • Spontaneity • Prediction • Law of chem equilibrium • Hands-on lab work **1, 2** | • Acid-base • Oxidation-reduction • LeChatelier's Principle • Hands-on lab work **1, 2** | • Nuclear reactions • Organic reactions • Stars • Analysis lab project • Hands-on lab work **1, 2, 4** |
| **AP European History** | • Middle Ages • Renaissance **1, 2, 3, 4, 5** | • Protestant Reformation • Religious wars • Thirty Years' Wars **1, 3, 4, 5** | • Commercial revolution • Colonization • Absolute monarchs **1, 3, 4** | • Scientific Revolution • Enlightenment • French Revolution **1, 3, 4, 5** | • Industrial Revolution and urbanization • Congress of Vienna • Rise of liberalism **1, 3, 4, 5** | • Unification of Italy and Germany • International competition and industrialization • Middle class challenged **1, 3, 4** | • World War I • Russian Revolution • World between wars **1, 3, 4, 5** | • World War II • Cold War • Modern Europe **1, 3, 4, 5** | • Middle East **1, 3, 4, 5** |
| **Math 11H** | • Polynomial and rational expressions **1** • Intro to functions **1, 3** • Powers and exponents | • Exponential and power functions **1, 3** • Inverse functions **1** • Transformations of functions **1, 3** | • Logarithms • Logarithmic functions **1, 3** | • Curve fitting and data analysis **1, 3, 5** | • Quadratic equations and complex numbers | • Cosine and sine functions • Trigonometry functions and identities • Equations and inequalities | • Quadratic equations and complex numbers • Trigonometry equations project **1, 2, 3** | • Trigonometry applied to triangles | • Probability • Statistics • Final project |
| **Math 10H** | • Polynomial expressions • Factoring • Higher degree expressions | • Rational expressions • One variable data displays **2, 5** | • Graphing techniques • Two variable data **1** | • Equation solving techniques • Analyzing two variable data **1** | • Properties of geometric shapes • Great mathematicians museum project | • Right triangles and trigonometry • Great mathematicians museum project | • Locus • Logic | • Geometric proof • Matrices | • Probability |

## CONNECTIONS High School Appendix 1. Curriculum Maps
## Curriculum Map for Outcome B (continued)

B. The student recognizes the impact of change by:

1. stating consequences of change
2. articulating and adapting coping strategies for dealing with change
3. discussing various reactions to change
4. recognizing what causes resistance to change
5. recognizing how change affects one's expectations

| | September | October | November | December | January | February | March | April | May |
|---|---|---|---|---|---|---|---|---|---|
| **US History & Government 11** | • Constitutional foundations<br>**1** | • Constitutional foundations<br>• Constitution at work<br>**1** | • Constitution tested<br>• Reconstruction<br>**1, 3, 4** | • American industrialization<br>**1, 2, 3** | • American industrialization<br>• Changing America<br>**1, 2, 3, 4** | • Protest and reform<br>• America reaching out<br>**1, 2, 3, 4** | • America reaching out<br>• Prosperity and depression<br>**1, 2, 4, 5** | • Age of global crisis<br>• America in uncertain times<br>**1, 2, 3, 4, 5** | • Limits of power<br>**2, 3** |
| **Latin 9** | • Intro to Latin<br>• Indo-European family of languages | • Verbs<br>• Commands<br>• Prepositions<br>• Adverbs<br>**1, 2, 3, 4, 5** | • Neuter gender<br>• New irregular verbs<br>• 3rd declension adjectives<br>• Perfect tense and principal parts of verbs<br>• Numerals<br>**1** | • Dative case<br>• Future tense<br>• Pluperfect and future perfect tenses<br>• 4th and 5th declensions<br>**1, 3, 4** | • Intro to passive voice<br>• Pronouns<br>• Compound verbs<br>**1, 2, 3, 4, 5** | • Passive voice<br>• Intro to poetry<br>• Participles<br>• Comparisons<br>• Human body and vocabulary<br>**1** | • Dependent verbs<br>• Place and time<br>• Participles<br>• Intro to subjunctive<br>**1, 4** | • Uses of the subjunctive<br>• Ablative absolutes<br>• Indirect statement<br>**1, 2, 3, 4, 5** | • Uses of the subjunctive<br>• Ablative absolutes<br>• Indirect statement<br>• Impersonal verbs<br>**1, 2, 3, 4, 5** |
| **English 11** | • Beowulf<br>• Bede, "Seafarer" (Exeter book)<br>• Ballads<br>• Riddles | • Malory, *Morte d'Arthur*<br>• Legends of "King Arthur"<br>• "Sir Gawain"<br>• Chaucer, *Canterbury Tales* | • Shakespeare, Sonnets and *Macbeth*<br>**1, 2, 5** | • Sir Thomas More, *Utopia*<br>• Aldous Huxley, *Brave New World*<br>**3** | • Sir Thomas More, *Utopia*<br>• Aldous Huxley, *Brave New World*<br>**3, 4** | • Dennis Hevesi, "Running Away"<br>• Stephen Crane, *Maggie Girl of the Streets*<br>**3, 4** | • Saki, "Tobermory"<br>• G.B. Shaw, *Pygmalion* | • Arthur Miller, *Death of a Salesman*<br>**1, 2, 3, 4, 5** | • George Orwell, "Shooting an Elephant" and *1984* |
| **English 10R** | • Greek and Latin poetry<br>• Culture<br>• Lyric<br>• Epic<br>**3, 4, 5** | • Greek Theater<br>• *Oedipus Rex*<br>• Greek and Roman Art<br>**3, 4, 5** | • Middle Ages<br>• Arthurian legends<br>• *Beowulf*<br>• Chivalry<br>• Confluence<br>**3, 4, 5** | • Middle Ages<br>• *Tristan and Iseult*<br>• Chivalry<br>• Courtly love<br>• Medieval art<br>**3, 4, 5** | • Renaissance<br>• *Doctor Faustus*<br>• Sonnets<br>**3, 4, 5** | • Renaissance<br>• *Macbeth*<br>**3, 4, 5** | • Renaissance art<br>• Romantic and Victorian Ages<br>• Romantic poetry<br>• *A Christmas Carol*<br>**3, 4, 5** | • Impressionism<br>• Landscape painting<br>• Modern Age<br>• *Of Mice and Men*<br>**3, 4, 5** | • Modern Age<br>• *Night*<br>• *Twelve Angry Men*<br>• Modern art<br>**3, 4, 5** |

## CONNECTIONS High School Appendix 1. Curriculum Maps
## Curriculum Map for Outcome C

C. The student recognizes one's role in effecting change by:

1. discussing how an individual can influence change
2. recognizing what changes can or cannot be controlled
3. articulating effective strategies for change

| | September | October | November | December | January | February | March | April | May |
|---|---|---|---|---|---|---|---|---|---|
| **Chemistry** | • Great ideas in chemistry | • Great ideas<br>• Stoichiometry<br>• Equations<br>• Hands-on lab work<br>**1, 2, 3** | • Gas laws<br>• Stoichiometry<br>• Hands-on lab work<br>**1, 2, 3** | • Phases<br>• Mixtures<br>• Gas laws<br>• Hands-on lab work<br>**1, 2, 3** | • Bohr model<br>• Orbital model<br>• Links to history<br>• Hands-on lab work<br>• Quantum mechanics<br>**1, 2, 3** | • Kinetics<br>• Energy<br>• Hands-on lab work<br>**1, 2, 3** | • Equilibrium<br>• Free energy<br>• Spontaneity<br>• Prediction<br>• Law of chem equilibrium<br>• Hands-on lab work<br>**1, 2, 3** | • Acid-base<br>• Oxidation-reduction<br>• LeChatelier's Principle<br>• Hands-on lab work<br>**1, 2, 3** | • Nuclear reactions<br>• Organic reactions<br>• Stars<br>• Analysis lab project<br>• Hands-on lab work<br>**1, 2, 3** |
| **AP European History** | • Middle Ages<br>• Renaissance<br>**1** | • Protestant Reformation<br>• Religious wars<br>• Thirty Years' Wars<br>**1** | • Commercial revolution<br>• Colonization<br>• Absolute monarchs<br>**1, 2** | • Scientific Revolution<br>• Enlightenment<br>• French Revolution<br>**1** | • Industrial Revolution and urbanization<br>• Congress of Vienna<br>• Rise of liberalism<br>**1, 2, 3** | • Unification of Italy and Germany<br>• International competition and industrialization<br>• Middle class challenged<br>**1, 2, 3** | • World War I<br>• Russian Revolution<br>• World between wars<br>**1, 2, 3** | • World War II<br>• Cold War<br>• Modern Europe<br>**1, 2, 3** | • Middle East<br>**1, 2, 3** |
| **Math 11H** | • Polynomial and rational expressions<br>**1**<br>• Intro to functions **1, 2, 3**<br>• Powers and exponents | • Exponential and power functions<br>**1, 2, 3**<br>• Inverse functions<br>• Transformations of functions<br>**1, 2, 3** | • Logarithms<br>• Logarithmic functions<br>**1, 2, 3** | • Curve fitting and data analysis<br>**1, 2, 3** | • Quadratic equations and complex numbers | • Cosine and sine functions<br>• Trigonometry functions and identities<br>• Equations and inequalities<br>**1, 2** | • Quadratic equations and complex numbers<br>• Trigonometry equations project | • Trigonometry applied to triangles | • Probability<br>• Statistics<br>• Final project<br>**1, 2** |
| **Math 10H** | • Polynomial expressions<br>• Factoring<br>• Higher degree expressions | • Rational expressions<br>• One variable data displays<br>**2** | • Graphing techniques<br>• Two variable data<br>**2** | • Equation solving techniques<br>• Analyzing two variable data<br>**2** | • Properties of geometric shapes<br>• Great mathematicians museum project<br>**1** | • Right triangles and trigonometry<br>• Great mathematicians museum project<br>**1** | • Locus<br>• Logic | • Geometric proof<br>• Matrices<br>**3** | • Probability |

## CONNECTIONS High School Appendix 1. Curriculum Maps
## Curriculum Map for Outcome C (continued)

C. The student recognizes one's role in effecting change by:

1. discussing how an individual can influence change
2. recognizing what changes can or cannot be controlled
3. articulating effective strategies for change

| | September | October | November | December | January | February | March | April | May |
|---|---|---|---|---|---|---|---|---|---|
| **US History & Government 11** | • Constitutional foundations | • Constitutional foundations<br>• Constitution at work<br>**1** | • Constitution tested<br>• Reconstruction | • American industrialization<br>**1, 2** | • American industrialization<br>• Changing America<br>**1, 3** | • Protest and reform<br>• America reaching out<br>**1, 3** | • America reaching out<br>• Prosperity and depression<br>**1, 2, 3** | • Age of global crisis<br>• America in uncertain times<br>**1, 3** | • Limits of power<br>**1, 3** |
| **Latin 9** | • Intro to Latin<br>• Indo-European family of languages | • Verbs<br>• Commands<br>• Prepositions<br>• Adverbs | • Neuter gender<br>• New irregular verbs<br>• 3rd declension adjectives<br>• Perfect tense and principal parts of verbs<br>• Numerals | • Dative case<br>• Future tense<br>• Pluperfect and future perfect tenses<br>• 4th and 5th declensions | • Intro to passive voice<br>• Pronouns<br>• Compound verbs<br>**1, 2, 3** | • Passive voice<br>• Intro to poetry<br>• Participles<br>• Comparisons<br>• Human body and vocabulary | • Dependent verbs<br>• Place and time<br>• Participles<br>• Intro to subjunctive<br>**1, 2** | • Uses of the subjunctive<br>• Ablative absolutes<br>• Indirect statement<br>**1, 2, 3** | • Uses of the subjunctive<br>• Ablative absolutes<br>• Indirect statement<br>• Impersonal verbs |
| **English 11** | • Beowulf<br>• Bede, "Seafarer" (Exeter book)<br>• Ballads<br>• Riddles | • Malory, *Morte d'Arthur*<br>• Legends of "King Arthur"<br>• "Sir Gawain"<br>• Chaucer, *Canterbury Tales* | • Shakespeare, Sonnets and *Macbeth* | • Sir Thomas More, *Utopia*<br>• Aldous Huxley, *Brave New World*<br>**1** | • Sir Thomas More, *Utopia*<br>• Aldous Huxley, *Brave New World*<br>**1** | • Dennis Hevesi, "Running Away"<br>• Stephen Crane, *Maggie Girl of the Streets* | • Saki, "Tobermory"<br>• G.B. Shaw, *Pygmalion*<br>**1** | • Arthur Miller, *Death of a Salesman* | • George Orwell, "Shooting an Elephant" and *1984*<br>**2, 3** |
| **English 10R** | • Greek and Latin poetry<br>• Culture<br>• Lyric<br>• Epic<br>**1** | • Greek Theater<br>• *Oedipus Rex*<br>• Greek and Roman Art<br>**1** | • Middle Ages<br>• Arthurian legends<br>• *Beowulf*<br>• Chivalry<br>• Confluence<br>**1** | • Middle Ages<br>• *Tristan and Iseult*<br>• Chivalry<br>• Courtly love<br>• Medieval art<br>**1** | • Renaissance<br>• *Doctor Faustus*<br>• Sonnets<br>**1** | • Renaissance<br>• *Macbeth*<br>**1** | • Renaissance art<br>• Romantic and Victorian Ages<br>• Romantic poetry<br>• *A Christmas Carol*<br>**1** | • Impressionism<br>• Landscape painting<br>• Modern Age<br>• *Of Mice and Men*<br>**1** | • Modern Age<br>• *Night*<br>• *Twelve Angry Men*<br>• Modern art<br>**1** |

## CONNECTIONS High School Appendix 1. Curriculum Maps
## Curriculum Map for Outcome D

D. The student employs multiple capacities to study change by:
1. analyzing situations that involve change
2. measuring and discussing the rate of change
3. modeling phenomena that change

| | September | October | November | December | January | February | March | April | May |
|---|---|---|---|---|---|---|---|---|---|
| **Chemistry** | • Great ideas in chemistry | • Great ideas<br>• Stoichiometry<br>• Equations<br>• Hands-on lab work<br>**1, 2, 3** | • Gas laws<br>• Stoichiometry<br>• Hands-on lab work<br>**1, 2, 3** | • Phases<br>• Mixtures<br>• Gas laws<br>• Hands-on lab work<br>**1, 2, 3** | • Bohr model<br>• Orbital model<br>• Links to history<br>• Hands-on lab work<br>• Quantum mechanics<br>**1, 2, 3** | • Kinetics<br>• Energy<br>• Hands-on lab work<br>**1, 2, 3** | • Equilibrium<br>• Free energy<br>• Spontaneity<br>• Prediction<br>• Law of chem equilibrium<br>• Hands-on lab work<br>**1, 2, 3** | • Acid-base<br>• Oxidation-reduction<br>• LeChatelier's Principle<br>• Hands-on lab work<br>**1, 2, 3** | • Nuclear reactions<br>• Organic reactions<br>• Stars<br>• Analysis lab project<br>• Hands-on lab work<br>**1, 2, 3** |
| **AP European History** | • Middle Ages<br>• Renaissance<br>**1** | • Protestant Reformation<br>• Religious wars<br>• Thirty Years' Wars<br>**1** | • Commercial revolution<br>• Colonization<br>• Absolute monarchs<br>**1** | • Scientific Revolution<br>• Enlightenment<br>• French Revolution<br>**1, 2** | • Industrial Revolution and urbanization<br>• Congress of Vienna<br>• Rise of liberalism | • Unification of Italy and Germany<br>• International competition and industrialization<br>• Middle class challenged<br>**1** | • World War I<br>• Russian Revolution<br>• World between wars<br>**1, 2** | • World War II<br>• Cold War<br>• Modern Europe<br>**1** | • Middle East<br>**1, 2** |
| **Math 11H** | • Polynomial and rational expressions<br>**1, 2**<br>• Intro to functions **1, 2, 3**<br>• Powers and exponents **1** | • Exponential and power functions<br>**1, 2, 3**<br>• Inverse functions **1**<br>• Transformations of functions<br>**1, 2, 3** | • Logarithms<br>• Logarithmic functions<br>**1, 2, 3** | • Curve fitting and data analysis<br>**1, 2, 3** | • Quadratic equations and complex numbers | • Cosine and sine functions<br>• Trig functions and identities<br>• Equations and inequalities<br>**1, 2, 3** | • Quadratic equations and complex numbers<br>• Trig equations project<br>**1, 3** | • Trigonometry applied to triangles | • Probability<br>• Statistics<br>• Final project<br>**1, 2, 3** |
| **Math 10H** | • Polynomial expressions<br>• Factoring<br>• Higher degree expressions<br>**1** | • Rational expressions<br>• One variable data displays<br>**1, 2** | • Graphing techniques<br>• Two variable data<br>**1, 2, 3** | • Equation solving techniques<br>• Analyzing two variable data<br>**1, 2, 3** | • Properties of geometric shapes<br>• Great mathematicians museum project<br>**1, 3** | • Right triangles and trig<br>• Great mathematicians museum project<br>**1, 2, 3** | • Locus<br>• Logic | • Geometric proof<br>• Matrices | • Probability<br>**1, 2, 3** |

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## CONNECTIONS High School Appendix 1. Curriculum Maps
## Curriculum Map for Outcome D (continued)

D. The student employs multiple capacities to study change by:
1. analyzing situations that involve change
2. measuring and discussing the rate of change
3. modeling phenomena that change

| | September | October | November | December | January | February | March | April | May |
|---|---|---|---|---|---|---|---|---|---|
| **US History & Government 11** | • Constitutional foundations | • Constitutional foundations<br>• Constitution at work | • Constitution tested<br>• Reconstruction<br>**1, 2** | • American industrialization<br>**1, 2** | • American industrialization<br>• Changing America<br>**1, 2** | • Protest and reform<br>• America reaching out<br>**1** | • America reaching out<br>• Prosperity and depression | • Age of global crisis<br>• America in uncertain times<br>**1** | • Limits of power<br>**1, 2** |
| **Latin 9** | • Intro to Latin<br>• Indo-European family of languages | • Verbs<br>• Commands<br>• Prepositions<br>• Adverbs | • Neuter gender<br>• New irregular verbs<br>• 3rd declension adjectives<br>• Perfect tense and principal parts of verbs<br>• Numerals | • Dative case<br>• Future tense<br>• Pluperfect and future perfect tenses<br>• 4th and 5th declensions | • Intro to passive voice<br>• Pronouns<br>• Compound verbs | • Passive voice<br>• Intro to poetry<br>• Participles<br>• Comparisons<br>• Human body and vocabulary<br>**1** | • Dependent verbs<br>• Place and time<br>• Participles<br>• Intro to subjunctive | • Uses of the subjunctive<br>• Ablative absolutes<br>• Indirect statement<br>**1** | • Uses of the subjunctive<br>• Ablative absolutes<br>• Indirect statement<br>• Impersonal verbs |
| **English 11** | • Beowulf<br>• Bede, "Seafarer" (Exeter book)<br>• Ballads<br>• Riddles | • Malory, *Morte d'Arthur*<br>• Legends of "King Arthur"<br>• "Sir Gawain"<br>• Chaucer, *Canterbury Tales* | • Shakespeare, Sonnets and *Macbeth* | • Sir Thomas More, *Utopia*<br>• Aldous Huxley, *Brave New World* | • Sir Thomas More, *Utopia*<br>• Aldous Huxley, *Brave New World* | • Dennis Hevesi, "Running Away"<br>• Stephen Crane, *Maggie Girl of the Streets* | • Saki, "Tobermory"<br>• G.B. Shaw, *Pygmalion* | • Arthur Miller, *Death of a Salesman* | • George Orwell, "Shooting an Elephant" and *1984* |
| **English 10R** | • Greek and Latin poetry<br>• Culture<br>• Lyric<br>• Epic | • Greek Theater<br>• *Oedipus Rex*<br>• Greek and Roman Art | • Middle Ages<br>• Arthurian legends<br>• *Beowulf*<br>• Chivalry<br>• Confluence | • Middle Ages<br>• *Tristan and Iseult*<br>• Chivalry<br>• Courtly love<br>• Medieval art | • Renaissance<br>• *Doctor Faustus*<br>• Sonnets | • Renaissance<br>• *Macbeth* | • Renaissance art<br>• Romantic and Victorian Ages<br>• Romantic poetry<br>• *A Christmas Carol* | • Impressionism<br>• Landscape painting<br>• Modern Age<br>• *Of Mice and Men* | • Modern Age<br>• *Night*<br>• *Twelve Angry Men*<br>• Modern art |



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## Water Project: Assignments and Rubric

### I. Water Analysis Assignment, Part I

*Students will form groups of 3 to 5 students and do the following:*

1. Devise tests for one of the following:

   salt ($Na^+$, $Cl^-$)
   hardness ($Ca^{2+}$, $Mg^{2+}$)
   transition metals ($Fe^{3+}$, $Fe^{2+}$, $Cu^{2+}$)
   heavy metals ($Hg^{2+}$, $Pb^{2+}$)
   anions ($NO_3^-$, $PO_4^{3-}$, $SO_4^{2-}$)
   dissolved gases ($O_2$, $CO_2$, $NO_2$, $NH_3$, $H_2S$)
   organics (petroleum, $PCB_s$)
   physical properties (pH, clarity, temperature)

2. Determine sensitivities and interference of tests.

3. Sample stream above and below population concentrations and perform the devised tests.

4. Test drinking water.

### II. Water Analysis Assignment, Part II

1. *One* page *analysis* of Indian Kill, Alpaus Creek, Mohawk River tap water.

2. *One* page *procedure* with clear, concise steps, chemical reactions given, and briefly explained.

3. Lab testing: calibration, reliability, interference

4. Meaningful records in team notebook

5. Search of the literature

6. Group cooperation

| *Evaluation Rubric for Water Analysis Assignment* | |
|---|---|
| H | Meets all requirements with clarity, conciseness, accuracy, and style. Tests work with stated accuracy which is verified in the lab work. All members of the team have written significant contributions in the team notebook. At least four references used. Alternate lab tests tried. |
| A | Meets all requirements. Most members of the team have written significant contributions in the team notebook. At least three references used. Analysis, procedure, and lab testing accurate. |
| B | Meets most requirements. Different members of the team have written significant contributions in the team notebook. At least two references used. Procedure and analysis are clear. |
| C | Has a useable procedure. Has a team notebook with a written record. Has a record of lab testing. |
| D | Has a written record of attempts at a procedure. Has a team notebook with a written record. |

**III. Further Assessment or Test**

A slowly moving stream is tested yielding the following results:

dissolved oxygen is low (4 ppm)
nitrates are low (<0.1 ppm)
phosphates are low (<0.01)
turbidity is high (100JTU)

1. What is the condition (water quality) of the stream?

2. What are the probable causes for its condition? Justify your answer based on the data.

3. What single additional test would you like to do? Explain how this test will help you in determining the stream's condition.

4. What could be done to improve the quality of the stream?

## Stream Study: Assignment and Rubric

### I. The Assignment

1. *One page* (8 ½ x 11) procedure with clear, concise steps

2. *One page scale drawing* (8 ½ x 11) of overhead view of stream section (with scale) with stream features, measurements, and surroundings included. Depth profiles will also be included.

3. *One page* (8 ½ x 11) presentation of physical data in paragraph form such as weather on day of visitation, stream bottom, pH, temperature, turbidity, sunlight on stream, current speed, and stream chemistry (e.g., dissolved oxygen, nitrates, phosphates).

4. *One page* (8 ½ x 11) analysis of organisms found and water quality. Include number of each organism collected and spot characteristics used to identify them.

| | *The Rubric* |
|---|---|
| 5 | The entire write-up is neat, complete, succinct, and aesthetically pleasing. The procedure is easy to follow, accurate, and describes pieces of equipment used as well as how to use them. Map is well organized and drawn to scale and contains a complete set of accurate data. The physical data are accurate and presented clearly. The analysis demonstrates the student's ability to distinguish between stream invertebrates (possibly using diagrams) as well as finding the correct correlations between indicator organisms and water quality. |
| 4 | The entire write-up is neat, complete, and succinct. The procedure is easy to follow, accurate, and describes the use of most of specific equipment for obtaining data. Map is well organized, drawn to scale, and contains a complete set of accurate data. The physical data are accurate and presented clearly. The analysis demonstrates the student's ability to distinguish between stream invertebrates as well as finding the correct correlations between indicator organisms and water quality. |
| 3 | The entire write-up is neat and complete. The procedure is easy to follow and accurate and mentions the use of most of the equipment used. A map is drawn to scale and contains a complete set of accurate data. The physical data are complete and accurate. The analysis shows the student's ability to distinguish between most of the stream invertebrates and shows a correct correlation between stream invertebrates and water quality. |
| 2 | The entire write-up is neat and mostly complete. The procedure can be followed and contains most of the steps. The map is drawn mostly to scale with most of the data. Most of the physical data are presented. The analysis shows a correct correlation between stream invertebrates and water quality. |
| 1 | Write-up is mostly complete. Procedure is missing several steps. Map drawn, but not to scale and missing some data. Much of the physical data are missing or unclear. Analysis shows a correct correlation between stream invertebrates and water quality. |

## II. Assessment Tools: Generic Questions

1. When a dialysis bag half-filled with dark Karo syrup is placed in a beaker of tap water, what is changing and what is remaining the same? (*Outcome A, Indicator 1*)

2. What is causing the change observed in the demonstration? (*Outcome A, Indicator 2*)

3. Is there a generalization that can be made from observing this demonstration? (*Outcome A, Indicator 3*)

4. How is this demonstration related to the fact that shipwreck victims stranded on a desert island cannot drink the sea water when they get thirsty? (*Outcome B, Indicator 1*)

5. If we set up two beakers, one with warm water and the other with cold water, would the results be the same? (*Outcome C, Indicator 1; Outcome D, Indicator 2*)

6. What type of graph would show this change best? What are your dependent and independent variables? (*Outcome D, Indicator 1*)

7. Using a molecular model, how can you explain what you witnessed in the demonstration? (*Outcome D, Indicator 3*)

## CONNECTIONS High School Appendix 4. Social Studies Project I: Hydro-Politics in the Middle East

### Constructing and Responding to a Documents Based Question (DBQ)

**I. Construct a Documents Based Question (DBQ)**

Construct a DBQ on the topic of Hydro-Politics in the Middle East by:

- researching the topic
- gathering a variety of relevant articles, books, data
- posing a relevant question that one may respond to using the documents you provide
- providing a detailed historical context for the question
- providing 10 to 12 passages, pictures, cartoons, maps, graphs, etc., that present information on the topic

The question and documents must:

- require consideration of various opinions/interpretations
- provide relevant background information
- assist others in arriving at informed, intelligent conclusions

Other general information:

- appropriate citations must be included (MLA Handbook)
- refer to the sample DBQ as a guide for format and structure
- work must be typed or word-processed

**II. Respond to a Documents Based Question**

*After being submitted, the DBQs that have been constructed will be redistributed. You are responsible for responding to a DBQ constructed by a classmate. Your essay response will be graded, but you will also have the task of evaluating that DBQ to which you have been asked to respond.*

Consider the following topics when evaluating the DBQ:

- relevance of the question
- quality of information provided by the historical background and setting
- relevance of the documents provided
- variety of opinions/interpretations provided in the documents

## CONNECTIONS High School Appendix 4A. Social Studies Project I: Hydro-Politics in the Middle East

### Rubrics for Constructing and Responding to a Documents Based Question (DBQ)

#### I. Rubric for Writing a Documents Based Question

**Topic:** _____ **Name:** _____

*Data Gathering*

| | |
|---|---|
| _____ 4 points | Abundant, relevant data gathered from a wide selection/variety of sources. |
| _____ 3 points | Adequate data gathered from several sources. |
| _____ 2 points | Limited data from a limited number/variety of sources. |
| _____ 1 point | Little data, demonstrates little. |
| _____ 0 points | No relevant data. |

*Document Editing*

| | |
|---|---|
| _____ 4 points | Documents provide abundant information pertaining to the question and offer differing opinions, attitudes, and perspectives on the issues. A variety of types of documents are offered, including graphs, pictures, political cartoons, along with written material. |
| _____ 3 points | Documents provide abundant information relevant to the question and offer some opposing points of view. A variety of types of documents is offered. |
| _____ 2 points | Documents are related to the question, but provide limited information about the topic. Little attempt at providing opposing views or a variety of kinds of documents. |
| _____ 1 point | Documents provide some very limited information concerning the question and overall topic. |
| _____ 0 points | Documents offer no relevant information needed to respond to the question. |

*Documents Based Question*

| | |
|---|---|
| _____ 4 points | A question, relevant to the topic that requires analysis of the documents and requires consideration of various opinions, attitudes, and perspectives. |
| _____ 3 points | A relevant question that requires limited analysis of the issues and documents. |
| _____ 2 points | A relevant question but requires very little analysis of the issues and documents. |
| _____ 1 point | A question with little relevance to the topic. |
| _____ 0 points | No relevant question. |

*Writing Skills (includes grammar, spelling, usage, and proofreading)*

| | |
|---|---|
| _____ 4 points | No errors. |
| _____ 3 points | A few errors that do not detract substantially from the DBQ. |
| _____ 2 points | Several errors that detract from the DBQ. |
| _____ 1 point | Many errors that substantially detract from the DBQ. |
| _____ 0 points | Marked by numerous errors. |

*Citations*

| | |
|---|---|
| _____ 4 points | All references and sources correct. |
| _____ 3 points | A few minor errors that do not impede location of sources. |
| _____ 2 points | Several errors that do not substantially impede location of sources. |
| _____ 1 point | Contains error(s) that impede location of sources. |
| _____ 0 points | Numerous errors that impede location of sources. |

**_____ Total Points** **x 4 =** **Grade _____**

## II. Rubric for Scoring a Documents Based Question

**Assignment:** _____ **Name:** _____

*Thesis/Argument*

_____ 5 points Strong thesis, well-developed and organized. Focuses on the question and implied topics.
_____ 4 points A well-organized/developed thesis that focuses on the question.
_____ 3 points A partially developed thesis, but lacking some focus in regard to the question.
_____ 2 points A poorly organized/developed thesis and/or a thesis that has some limited relevance to the question.
_____ 1 point A thesis that does not pertain to the question.
_____ 0 points No thesis.

*Analysis/Critical Thought*

_____ 5 points Complete/accurate analysis of the documents. Acknowledges factors such as conflicting accounts and differing points of view. Uses relevant outside information in analysis.
_____ 4 points Complete/accurate account of the documents. Acknowledges factors such as conflicting accounts and differing points of view.
_____ 3 points Accurately analyzes the most relevant documents.
_____ 2 points Accurate analysis is combined with inaccurate and/or incomplete analysis.
_____ 1 point Little evidence of accurate analysis of the documents.
_____ 0 points No evidence of analysis.

*Historical Evidence*

_____ 5 points Information from the documents is used in conjunction with outside sources in response to the thesis.
_____ 4 points Considerable use of information from the documents in response to the thesis.
_____ 3 points Uses information from documents in response to the thesis, but often paraphrases documents without linking them to the thesis.
_____ 2 points Mostly paraphrases documents without linking them to the thesis. Marked by some inaccuracies.
_____ 1 point Poor use of documents. Offers only a brief citation or paraphrase. Marked by inaccuracy.
_____ 0 points No relevant use of documents.

*Writing*

_____ 5 points Well-developed, complex writing style. Well-organized/well-written. Grammar, mechanics, and spelling are consistently correct. Proper citation of documents and other historical information.
_____ 4 points Clearly organized and logical. Grammar, mechanics, and spelling are consistently correct. Proper citation of documents.
_____ 3 points Clear organization and writing. Some errors in grammar, mechanics, and spelling. Usually offers proper citation of documents.
_____ 2 points Organization of ideas is sometimes confusing/unclear. Grammar, mechanics, and spelling marked by errors. Usually offers proper citation of documents.
_____ 1 point Weak organization. Writing is confusing and marked by errors in grammar, mechanics, and spelling. Improper citation of documents.
_____ 0 points Disorganized and poorly written. Marked by numerous errors.

_____ **Total Points** **Grade** _____

## CONNECTIONS High School Appendix 5. Social Studies Project II: Three Gorges Hydro Project of China

### Global Studies Documents Based Question

**Directions**

The following question is based on the accompanying Documents 1-8. Some of the documents have been edited for the purposes of this exercise. This question is designed to test your ability to work with historical documents. As you analyze the documents, *take into account both the sources of the documents and the points of view of the authors.*

Write an essay that includes your analysis of the documents. You should cite and refer to the documents that you use to answer the question; you should use as many of the documents as you can to reinforce your argument. You should include specific historical details, and you may discuss documents not provided in the question.

**Question**

***How does the Three Gorges Hydro project represent change, and at the same time, how is it consistent with patterns of traditional China?***

**Historical Background**

The longest river in Asia and also the fourth longest in the world, the Yangtze River (in Pinyin, Chang Jiang) flows for 3,716 miles from the Kunlun Mountains of Tibet in western China to the East China Sea just north of Shanghai. The river flows generally north and eastward, crossing 12 of China's provinces and autonomous regions. It is on this river that the People's Republic of China has undertaken the construction of a dam that will measure 607 feet high and 7,054 feet long (six times the length of the Hoover Dam). Scheduled to be completed in the year 2009, the "superdam" will cost $12 billion, and it will be twice the size of the world's currently largest hydro project, Brazil's Itaipu Dam. The gross amount of material in the construction of the dam would duplicate the Great Pyramid 44 times over, making it only the second man-made object visible by telescope from the Moon. Once construction is complete, the dam will form a 418 square mile reservoir. The Chinese government believes the prospect of cheap electricity and inexpensive river transportation will transform the region surrounding Chongqing into a city of 15 million, making it an industrial powerhouse for the 21st century.

**Document 1**

The superdam will also provide some flood relief in central and eastern China. Floods have inundated the Yangtze basin more than 200 times in the past 2000 years, including three times this century.

Taken from *Popular Mechanics*, July 1996

**Document 2**

In May 1992 police arrested 179 members of the Democratic Youth Party in Kai County and charged them with counterrevolutionary activities aimed at sabotaging the progress of the Three Gorges project. To this day no one knows their whereabouts or legal status.

Audrey R. Topping, *Foreign Affairs*, September/October 1995

**Document 3**

Supporters say the Three Gorges Dam, the crown jewel of China's industrialization plan, will help control treacherous flooding in the Yangtze River plain, and produce enough electricity to replace 50 million tons of dirty-burning coal a year for the energy-starved, pollution-plagued country.

*Los Angeles Times*, December 26, 1995

**Document 4**

The critics are all outside China; those inside the country have been silenced by the government.

*Canada and the World*, October 1, 1995

**Document 5**

Chinese archeologists say the only comparable project of modern times was carried out in the 1960s in Egypt, when the Nile was dammed at Aswan, flooding out river banks that held relics of thousands of years of Egyptian civilization.

Philip Shenon, *New York Times*, October 10, 1994

**Document 6**

The issue is how a rapidly growing nation of 1.2 billion people, all of whom would like refrigerators and other conveniences, can promote economic development without wrecking its environment.

Sandra Burton, *Time*, December 19, 1994

**Document 7**

Public debate on Three Gorges – and almost every other issue of public concern – is now forbidden.

"To Save A Sacred River," *Reader's Digest*, May 1994

**Document 8**

Although difficult for outsiders to understand, China is still gripped by a Great Leap Forward mentality – Mao Zedong's ill-conceived project in 1958-1960 to catch up with the West. This mendacity inspires support for the most extravagant plans to achieve international prominence irrespective of the economic or human costs.

Lawrence R. Sullivan, *Current History*, September 1995

**Document 9**

The region of the Three Gorges is seismically active and landslides are frequent. An earthquake or a landslide overtopping or breaking the dam could submerge downstream cities like Wuhan, with a population of 4 million.

*Scientist*, January 1995

**Document 10**

A showcase for China, the dam is a model for how lack of transparency and debate, authoritarian decision-making and underlying unfair labor conditions can taint an ambitious enterprise.

*Human Rights Watch*, February 1995

**Document 11**

Much of the unique scenic splendor of the Yangtze River, which has been an integral part of Chinese life and mythology, will be lost forever. The environmental effects will be comparable to those of damming the Grand Canyon or diverting Niagara Falls.

Audrey R. Topping, *Foreign Affairs*, 1995

**Document 12**

After the Yangtze has been dammed, engineers will be left with only two major rivers to plug: the Zaire and the main stem of the Amazon.

*World Press Review*, May 1995

**Document 13**

(Map(s) of region.)

**Document 14**

Concern over the dam has reached such heights that many patriotic citizens have been impelled to openly challenge the regime's "mandate of heaven" for the first time since the communists took power in 1949.

*Foreign Affairs*, 1995

*Goal: The student will be an agent for positive change.*

**Outcome A: The student recognizes forces of change.**

*Indicators*

1. The student identifies what changes and what doesn't.
2. The student recognizes forces that can bring about change.
3. The student recognizes and articulates rhythms and patterns of change.

**Outcome B: The student recognizes the impact of change.**

*Indicators*

1. The student states consequences of change.
2. The student articulates and adapts coping strategies for dealing with change.
3. The student discusses various reactions to change.
4. The student recognizes what causes resistance to change.
5. The student recognizes how change affects one's expectations.

**Outcome C: The student recognizes one's role in effecting change.**

*Indicators*

1. The student discusses how an individual can influence change.
2. The student recognizes what changes can or cannot be controlled.
3. The student articulates effective strategies for change.

**Outcome D: The student employs multiple capacities to study change.**

*Indicators*

1. The student analyzes situations that involve change.
2. The student measures and discusses the rate of change.
3. The student models phenomena that change.

## CONNECTIONS High School Appendix 7. Generic Assessment Tools and Rubrics

### Assessment Tools: Generic Questions Keyed to Outcomes

**Outcome A: The student recognizes forces of change.**

1. In the given situation identify what is changing and what is remaining the same.
2. In the given situation describe what forces are causing the observed change.
3. In the given situation describe the pattern of the observed change.

**Outcome B: The student recognizes the impact of change.**

1. In the given situation what is the consequence of the observed change?
2. In the given situation what effective coping strategies have been used to deal with the observed change?
3. In the given situation discuss the various reactions to the observed change.
4. In the given situation describe some of the reasons for the resistance to the observed change.
5. In the given situation how does the observed change affect one's expectations?

**Outcome C: The student recognizes one's role in effecting change.**

1. In the given situation how could a person or group influence the change occurring?
2. In the given situation describe what changes can be controlled. What changes cannot be controlled?
3. In the given situation describe effective strategies for achieving the desired change.

**Outcome D: The student employs multiple capacities to study change.**

1. Collect data and information about the given situation and display the information in a meaningful way.
2. In the given situation determine the rate of the observed change.
3. Find a model that accurately fits the given situation. Use the model to predict the future of this situation and the previous conditions of this situation.

## Application of Generic Assessment Tools to a Library Media Project
### *Search Strategies for Electronic Databases*

**Outcome A: The student recognizes forces of change by**

*Indicators* 2. recognizing forces that can bring about change.
3. recognizing and articulating rhythms and patterns of change.

**Outcome A-2**

• Using varied search strategies can increase or decrease the number of "hits" or citations found.

- students will do a keyword search on *drunk driving*
- students will do a keyword search on *drunk driv**
- students will do a keyword search on *drunk driving* ***and*** *teenagers*
- students will do a keyword search on *drunk driving* ***or*** *teenagers*
- students will do a subject search on *drunk driving*

**Outcome A-3**

• Students will recognize that truncation will result in *more "hits."*
• Students will recognize that using the operator ***and*** will always result in *fewer "hits"* than a single keyword search or a search with the operator ***or***.
• Students will recognize that using the operator ***or*** will always result in *more "hits"* than a single keyword search or a search with the operator ***and***.
• Students will recognize that a *subject* search will result in fewer "hits" than a *keyword* search.

**Outcome B: The student recognizes the impact of change by**

*Indicators* 1. stating consequences of change.
2. articulating and adapting coping strategies for dealing with change.

**Outcome B-1**

• Students will state the consequences of using the following operators and/or search strategies:

- or
- and
- truncation
- subject vs. keyword

**Outcome B-2**

• Students will state the best search strategies for finding the most useful citations about teenage mothers.
• Students will state the best search strategies for finding the most useful citations about the band, "Nirvana."

**Outcome C: The student recognizes one's role in effecting change by**

*Indicators* 1. discussing how an individual can influence change.
2. recognizing what changes can or cannot be controlled.

**Outcome C-1**

• Students will discuss the consequences of using the following operators and/or search strategies:

- or
- and
- truncation
- subject vs. keyword

**Outcome C-2**

• Students will devise a search strategy to find citations about children who commit murder. They will attempt to refine the strategy to eliminate all citation about children as murder victims.

**Outcome D: The student employs multiple capacities to study change by**

*Indicator* 1. analyzing situations that involve change.

**Outcome D-1**

• Students will analyze why using the operator ***and*** results in fewer hits.
• Students will analyze why using the operator ***or*** results in more hits.
• Students will analyze why the use of *truncation* results in more hits.
• Students will analyze why the use of *keyword* searching results in more hits than the use of *subject* searching.

## Application of Generic Assessment Tools to a Library Media Project
### *Sample Questions for Research Skills*
### *Boolean Searching on a CD-ROM Database*

**Outcome A: The student recognizes forces of change by**

*Indicators*
2. recognizing forces that can bring about change.
3. recognizing and articulating rhythms and patterns of change.

**Questions for Outcome A**

a. How many "hits" do you get with the keywords, *drunk driving*? (194)
b. How many "hits" do you get with the keywords, *drunk driving **along with** teenagers*? (12)
c. How many "hits" do you get with the keywords, *drunk driving **but not** teenagers*? (182)

**Outcome B: The student recognizes the impact of change by**

*Indicators*
1. stating consequences of change.
2. articulating and adapting coping strategies for dealing with change.

**Questions for Outcome B**

a. Using the keywords *interracial **and** blacks* results in *14 "hits"*; *interracial* results in *"236 hits"*; *interracial **and** African-American* results in *31 "hits."* What do you think causes the large difference in the number of hits?
b. What will be the best keywords to use in a search for articles about the band, Nirvana?

**Outcome C: The student recognizes one's role in effecting change by**

*Indicators*
1. discussing how an individual can influence change.
2. recognizing what changes can or cannot be controlled.

**Questions for Outcome C**

a. What keywords are likely to produce the largest number of relevant hits for articles about children who commit murder?
b. Which of the following searches is likely to give you the largest number of relevant hits if you want information about teenagers who have had abortions?

- *abortion **and** teens* (7)
- *abortion **and** teens **or** youth* (20)
- *abortion **and** teens **but not** sex education* (17)
- *abortion **and** teens **or** youth **but not** sex education* (4)

**Outcome D: The student employs multiple capacities to study change by**

*Indicators*
1. analyzing situations that involve change.
2. measuring and discussing the rate of change.

**Questions for Outcome D**

a. List the number of "hits" with the following search terms:

- *music **and** alternative* (552)
- *music **and** alternate* (12)

What do you guess is the difference between the search terms *alternate* and *alternative*?

## Application of Generic Assessment Tools to a Latin Project
### *Aqueducts Project: Assignment and Rubrics*

**I. Assignment**

*Task*

Design a commemorative stamp on ancient Roman aqueducts for the Italian government. (This will form the cover of your workbook.)

*Requirements*

1. 8 ½ x 11 plain paper
2. a motto *in Latin* which you have composed
3. artistic representation of an aqueduct with "hints" of classical Rome

*Due*: June 10

**II. Rubrics**

| *Rubric for the Illustration* | |
|---|---|
| 5 | Very clear and detailed design accurately illustrated; very strong aesthetic appeal (*use of color, composition, balance, perspective*); clear lettering of Latin motto aesthetically presented; shows obvious knowledge of illustration from class and resource books. |
| 4 | Clear detailed design accurately illustrated; some aesthetic appeal; clear Latin lettering in motto; shows some awareness of class and resource examples. |
| 3 | Somewhat vague design with few details; accurately illustrated; little aesthetic appeal; Latin motto visible; shows little awareness of class and resource examples. |
| 2 | Vague design, with few to no details; some inaccuracies; little aesthetic appeal; Latin motto vague; no awareness of class and resource examples. |
| 1 | Vague design; no details; little to no aesthetic appeal; no Latin motto; no awareness of class and resource examples. |

| *Rubric for the Latin Motto* | |
|---|---|
| 5 | Catchy, creative wording; accurate vocabulary and grammar; motto very appropriate to themes of Roman culture studied (*engineering, water use, quality of life, government roles*); shows thorough familiarity with Roman culture. |
| 4 | Successful wording; accurate vocabulary and grammar; motto somewhat appropriate to themes of Roman culture studied; shows some familiarity with Roman culture. |
| 3 | Accurate vocabulary and grammar; motto vaguely related to themes of Roman culture studied; shows little familiarity with Roman culture. |
| 2 | Motto has some inaccuracies; only vaguely related to themes of Roman culture studied; shows little to no familiarity with Roman culture. |
| 1 | Motto has many inaccuracies; no relation to themes of Roman culture studied; shows no familiarity with Roman culture. |